THE

VETERINARY JOURNAL

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THE VETERINARY SURGEONS' ACT AMENDMENT BILL.

ALTHOUGH the Veterinary Surgeons' Act Amendment Bill has, thanks to the safe piloting of that distinguished surgeon, Sir Watson Cheyne, M.P., F.R.C.S., passed its second reading, and has now been referred to a Standing Committee, it is absolutely necessary that the members of the profession relax no efforts in obtaining the support of as many Members of Parliament as possible; and in putting the details before them, it will be well to emphasise the fact that we are not in any way trying to obtain anything which will stop the castrator from earning his living as he does now, nor are we interfering with anything at present in existence.

The sole and whole aim of this present Amendment Bill is to enable the Council of the Royal College of Veterinary Surgeons to tax the members of the profession the small sum of £1 1s. a year with the object of obtaining a legitimate amount of finances in order to enable the College to render to its members the proper amount of protection which is their legal right.

There has been, and is, great opposition to the Bill from certain sources, and several misleading statements have been made with a view to blocking it—such, for example, as that a large number of "deserving and industrious men," who at present earn a living by castrating, will be deprived of a means of livelihood ; and also that the object of the Bill is to eliminate unqualified practice.

The Bill does nothing of the sort. That a man must not, unless duly qualified, describe himself as a "Veterinary Surgeon" is already the law of the land, and no attempt is being made to extend or alter that ; and the bye-law which affects the unqualified assistant is not even alluded to in the amendment to the Bill. It is a bye-law which was passed some years since, and would have been enforced a long time ago but for the war. There is nothing more to explain—we are asking for nothing unreasonable, and if we have agreed to tax ourselves the matter is our own affair. The opposition is difficult to understand, and can only be explained by the very fact that those who have framed it have very evidently "got the wind up."

However, opposition must be met by counter-opposition, and the only sure way for the profession to carry its point is for us one and all to write to or interview as many Members of Parliament as possible, as the matter will come before them for final decision, and they will be the deciding factors.

In short, we must impress upon those who have the power to help us that the objects of the Veterinary Surgeons Act (1881) Amendment Bill are :—

(1) To provide funds for the R.C.V.S. Each practising member to pay £1 1s. annually.

(2) To give status to the practitioners registered under 1881 Act and bring them under jurisdiction of College.

(3) To provide that Companies shall not infringe Act of 1881.

Opponents claim registration of unqualified persons on the following allegations :—

(1) That the College seeks powers to eliminate unregistered practice.

(2) That stockowners will be prevented from employing unregistered persons to perform operations of any kind on their animals.

(3) That there is a dearth of qualified Veterinary Surgeons.

The first two allegations are proved to be without foundation, as is shown by the following opinion of the late Lord Advocate for Scotland :—" There is no provision either in the Act of 1881 or in the Bill striking at merely acting as a Veterinary Surgeon or at employing any person so to act whether qualified or not."

The third allegation is only true to the extent that the war reduced the number of students in Colleges, and that a number of members lost their lives on active service. Proper measures already taken to remedy this shortage are :—

(A) By College in granting exemptions from Prelim. to suitable ex-service candidates.

(B) By Ministry of Labour in awarding Maintenance and Training Grants to over 300 candidates to enable them to qualify.

There are, therefore, no grounds for the objections of our opponents. Unqualified persons are not touched in any way more than they were before.

The Bill is promoted solely in the interests of veterinary education, and contains nothing opposed to public interests.

PROFESSOR J. SHARE JONES, D.V.Sc., M.Sc., F.R.C.V.S.

It is a sign of the times that a British University has at last recognised in a tangible manner the value to be gained by the permanent attachment of a Veterinary Chair to the Teaching Faculty, and the University of Liverpool is to be congratulated upon having taken the lead. The Professorship of Veterinary Anatomy, which has been offered to and accepted by Dr. J. Share Jones, carries with it a seat on the University Senate, and Veterinary Anatomy thus receives a degree of recognition which has not yet been extended to any other branch of veterinary study. The occupier of this honour can settle down to study and teach with the full knowledge that until he has attained the age limit he is not likely to be dismissed and have to commence life again in a new sphere. It is a pioneer position, marking another distinct advance in the scientific progress of the profession, and Dr. Share Jones is to be congratulated on having thus had the years of work he has put in as lecturer on this subject so worthily recognised. His enthusiasm as a teacher, an author, and a worker on the Council for the welfare of the profession are too obvious and too well known to need comment, and as Director of the

Board of Veterinary Studies he has for some years had a large share in the progress which the Veterinary Faculty has made as a part of the University of Liverpool. This University was the first to encourage the mixing together of Medical and Veterinary in the same classes for such subjects as Chemistry, Botany, Biology, and Physiology during the first two years of scientific study, and the social side of the University life is equally open to the Veterinary students as to the students of each of the other Faculties.

Original Communications.

SOME OBSERVATIONS ON CANKER OF THE EAR IN RABBITS.

By C. J. DAVIES.

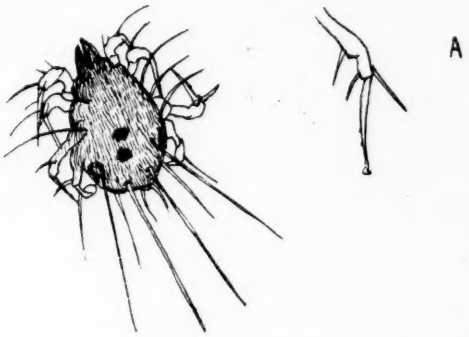
In Neumann's " Parasites " (2nd Edn.), the rabbit's ear is said to be subject to the attacks of what are believed to be the same Psoroptes as cause a form of mange in the horse, and parasites from the latter are illustrated in the section dealing with Psoroptic Otacariasis of the Rabbit.

That the rabbit usually suffers far more from ear parasites than is commonly supposed, everyone who makes a study of the subject will soon find out. The French statement that canker of the ear was found in 25% of individuals examined was certainly not an over-estimation. Indeed, it is the exception in the present writer's experience to receive rabbits in summer time from other breeders which do not show signs of the trouble, if it is carefully searched for, although in the majority of cases the animals are quite well and healthy and do not appear to suffer any marked inconvenience from their uninvited guests. At the same time this is not always the case, and whereas a rabbit may have an ear half filled with débris and seem not much the worse, in other cases inspection may reveal no obvious disorganisation of the ear at all, yet the rabbit carries its head on one side, goes thin and becomes very ill and does not recover until its ears are treated for canker.

With the idea of completely freeing all our rabbits from canker, and acting on the assumption (advanced by veterinary experts) that canker is mainly, if not invariably, transmitted from rabbit to rabbit by more or less direct contact, a systematic dressing, at first daily, then every third day, and finally at longer intervals, was carried out throughout a small rabbitry for a year. Andre's liniment was used, applied with a camel's hair brush.

A beginning was made by systematically dressing the ears of each doe and her litter from the time the young were about a month old. Such young as were reared for stock were dressed at intervals throughout their life until they too bred and became the mothers of families. Hutches, nest boxes, etc., were thoroughly creosoted during the summer as opportunity occurred. At the end of a year the position was arrived at of possessing one old stud buck which had shown signs of slight canker and had had his ears dressed regularly and then at intervals; and several young bucks and does which had been dressed systematically almost from birth. All the rabbits then occupied hutches which had either been creosoted or distempered inside. Yet at the end of the year some of the rabbits were found upon examination to have a touch of canker in a few weeks after the regular dressing was stopped; and the progeny of these rabbits were likewise affected.

At intervals during the year, débris from the rabbit's ears was microscopically examined and slides made showing eggs, larval forms,



Parasite from Rabbit's ear (magnified 43 diameters). A. Leg (third from the head) further enlarged.

and a third stage (generally considered, I believe, to be the adult stage) of a parasite. But no parasites corresponding exactly to Neumann's Psoroptes were found. On the other hand, in every bad case of canker which has come under the writer's observation during the last fifteen years, in a rather bad case sent by a breeder last year, and recently in the ears of the old stud buck which was supposed to have had his "touch" of canker "cured" some months previously, parasites were found which were identified in Neumann (p. 104) as *Tyroglyphus longior*. The same creature has also been hatched in great numbers in the summer without artificial heat in débris taken from a rabbit's ear and left for some days sealed down on a microscopic slide.

Were it not that so great an authority as Neumann has pronounced the rabbit's trouble to be due to *Psoroptes cuniculi*, I should hardly have hesitated, as a result of my own experiences, to attribute the complaint to *Tyroglyphus*, and I should go further and say that all the evidence obtainable points to the view that adult rabbits and young ones in the nest are perpetually becoming reinfected with this parasite from the hay which is given them to eat and make their nests.

As rabbits seem to thrive in a most exceptional and remarkable manner when their ears are kept clear of parasites, it would be of interest to know if any suggestions can be offered as to a less laborious means of keeping down this trouble than dressing perpetually in the manner already described.

A STONE IN THE CÆCUM OF A DOG.

By FREDERICK HOBDAY, F.R.C.V.S.
(*London.*)

THE patient, a fox terrier, 12 years old, was admitted to hospital January 20th, suffering from general malaise and occasional sickness, of the reason for which the owner could give no definite history. The general dulness and depression had been observed for three or four days and the dog was very weak.

On the 22nd laparotomy was decided upon, as by abdominal palpation a number of stones could be felt and heard grating one against another.

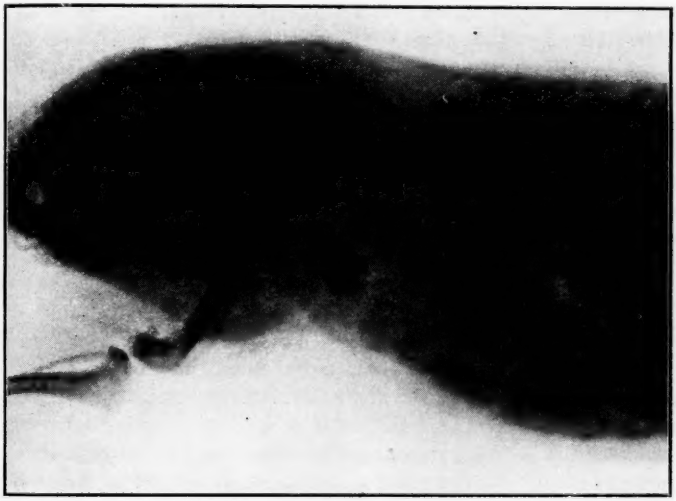
Under chloroform the abdomen was opened and the large intestine exposed. In this could be felt four hard bodies, and another, triangular in shape and with sharp edges, was lodged in the cæcum.

By digital manipulation each was passed backwards towards the rectum, where an assistant manipulated a long pair of forceps, through the blades of which they were secured and withdrawn. Upon being washed and examined, they proved to be flint stones, averaging in size from a filbert to a large walnut, such as are used for making pathways in gardens. In fact, their source of origin was traced subsequently to a trip in Kensington Gardens, when the little boy of the owner and his tutor had thrown the stones for the dog to fetch and carry. Unfortunately gangrene of the bowel wall had already set in and the patient died on the 23rd. I have frequently had patients brought to hospital with stones in the small intestine and colon, but it is not common to find one lodged in the cæcum; and in this instance the orifice was so inflamed that it could not possibly have returned without assistance.

CALCULUS OF THE BLADDER AND SUPRA-PUBIC CYSTOTOMY IN A BITCH.

By FREDERICK HOBDAY, F.R.C.V.S., AND HAROLD STAINTON, M.R.C.V.S.
(*London.*)

THE patient, a small Pekingese bitch, seven-and-a-half years old, and between 8 and 9 pounds in weight, had enjoyed excellent health until six months ago, when she shewed a little irritation during urination and a certain amount of incontinence; becoming, as the owner described it, "dirty in the house."



Skiagraph of Pekingese Bitch with Calculus in the Bladder.

She was first brought to us early in August, 1919, and upon examination we diagnosed pregnancy, but as the owner stated that this was quite impossible, she was not kept in hospital, but returned home with a supply of sedative medicine for the bladder irritation. However, at the end of August, she returned to hospital and was delivered of a puppy. Recovery from this was uneventful, but the bladder trouble increased; and, after a skiagraph had been taken, an operation was decided upon.

The calculus was removed by the supra-pubic operation and the little bitch was sent home next day, a special canine nurse being engaged to look after her. Convalescence, with the exception of a buried suture trouble, was quite uninterrupted, and she has made an excellent recovery.

XUM

ANÆSTHESIA IN BOVINES.

By ALFRED J. MILLIGAN, M.R.C.V.S.
(*Annan*).

Position of the Patient during the administration of chloroform.

With a cow that has horns I now cast without hobbles, as the horn is apt to be broken during the fall. I put a rope round the horns, a half-hitch round the body behind the elbow and another round the body in front of the mammary gland. I then give a steady pull on the rope and the animal is down. I then get a number of bundles of straw—these, of course, are previously prepared—and pack them from behind the withers and along the neck to the head. It is not necessary to put her on her sternum, but in a position midway between lying flat and a natural one. The reason for this is to prevent her from swelling as the gases in rumen always accumulate when a cow lies for a considerable time or even for a short time. The head is allowed to rest on the bundles of straw, the normal angle being maintained as far as possible. I do not fill the bags tightly with straw as the lower horn is apt to penetrate them. The attendant administering the chloroform goes on his knees and holds the upper horn.

Methods of Administration.

My first method was to pour the chloroform on to a piece of flannel or lint stretched across a metal mask of the human pattern. This was held over the upper nostril with one hand and the under nostril closed as desired with the other hand, so that the vapour was inhaled with one nostril only. This was a costly and tedious process as it always took, even under the most favourable circumstances, 20 to 25 minutes to put a cow completely under anæsthesia, and the quantity of chloroform used was from 4 to 6 ozs. If the animal had to be kept under for a considerable time there was not much left out of a 2-lb. bottle. It was a safe method for the cow, but a sickening job for the man at the head.

For some years I have used a " Hobday " mask. It is applied to the cow the same as it is applied to the horse ; only I do not interfere with the tongue, nor do I bundle a rug round the mask. The attendant steadies the head by the upper horn.

After the initial struggling a cloth may be laid over the mask if the animal is in the open. 1½ oz. of chloroform sprinkled on cotton wool and placed in a " Hobday " mask is usually sufficient to anæsthetise a cow in 10 to 12 minutes ; by applying 2 drachm doses occasionally the animal can be kept under as long as is necessary.

In a case of difficult parturition, which I anticipate will last a considerable time, I administer 1 oz. of chloral hydrate previous to applying the mask with the chloroform. The chloral I dissolve in 2 oz. of warm water and mix with 10 to 12 ounces of milk to make a drench.

My reason for giving chloral is that the mask can be removed after 2 ounces of chloroform have evaporated and the chloral is sufficient to keep the animal quiet enough for all purposes for a long time. The advantages of the " Hobday " inhaler over the old method are :—

1. Easy administration.
2. A small quantity of chloroform can be used.
3. Thus the animal is quickly anæsthetised and much time is saved.

Up to the present I have had two casualties in cattle when operating under chloroform, but in each the cause of death was accounted for upon *post mortem* and could scarcely be attributable to the use of the anæsthetic.

CASE 1.—A steer upon which I was operating on for pelvic hernia. It died when I was putting in the last stitch.

This animal had been ill for days and had received several doses of purgative from the owner. It was in an advanced stage of peritonitis and the amount of chloroform administered was only 2 ounces.

CASE 2.—An aged shorthorn cow, in fat condition, with an everted uterus.

As I got this animal early and the uterus had been supported in a clean sheet, I attempted to return it without chloroform. After much straining I had it almost in three or four times, but each time it was put out again. I then decided to use chlorofrom and applied a mask and 1½ oz. of chloroform. In about 1½ minutes the animal was dead. My only regret in this case was that I did not chloroform to begin with, as the patient had become very much exhausted.

FRACTURED RIBS AS THE RESULT OF MUSCULAR ACTION.

BY CAPTAIN E. H. WYLEY, R.A.V.C.

THE subject of this article was one of a pair of l.d. horses attached to a waggon loaded with manure. As the waggon was descending a rather steep and somewhat long hill, the brake failed to act, resulting in accelerated speed of the vehicle. This caused the animals to break into a trot, which soon became a gallop. The hill terminates in a busy thoroughfare, and in this street, on the footpath, exactly opposite the

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hill, stood a round red letter-box, into which the waggon dashed, the point of the pole striking the pillar box right in the centre and knocking it over. Both horses fell ; one on either side of the letter-box. The left or near horse got up almost immediately, the other made no attempt to rise and died in about five minutes. I was sent for and on arrival found the animal lying on his right (off) side, dead.

A casual examination pointed to internal hæmorrhage. The other horse had escaped with nothing more serious than a few abrasions on the inside of his left thigh. The carcase was taken to hospital, where a thorough external examination revealed nothing in the form of wounds or marks to show that the animal had met with an accident. Removal of the abdominal viscera afforded very little evidence as to the cause of death. On excision of the diaphragm it was noticed that the thoracic cavity was filled with blood. The heart and lungs were carefully removed, but nothing definite was found to account for the presence of such a large quantity of blood. The chest cavity was thoroughly washed out and then I noticed a patch of discolouration of the pleura at the antero-lateral extremity of the thorax. On manipulation over this area I was able to pass my hand through a jagged opening in the thoracic wall ; the right (off) fore limb was then partially detached from the trunk, and this revealed a complete fracture of the 1st, 2nd and 3rd ribs, together with extensive injuries to the vessels in the immediate neighbourhood.

REMARKS ON CHLOROFORMING STANDING AND SECURING FOR CASTRATION.

By W. ASCOTT, M.R.C.V.S.
Bideford.

I quite agree with those who advise caution if chloroform is administered standing, whether in a loose box or in the open ; for if one waits until the patient falls or lies down, it is asking for trouble. I forget when the method was first written about, but it was many years ago. The plan then recommended was to have two long ropes attached to the halter, with one or two men to each on either side at right angles to the patient, in order to control the movements during the period of excitement. I tried this plan at first, but soon modified it, as I found it much simpler and safer not to wait until the chloroform was well under weigh, and as I have used this modification in some hundreds of cases without a single mishap, it may not be considered out of place if I explain the method. It will be easier, perhaps, to explain if I describe, say, an ordinary preparation for castrating

a colt, no matter whether he has been haltered before or not. After haltering in the usual way with a long rope attached to the halter, I get an inhaler of Nelder's pattern, one with the cap hanging loose. When all is ready, one and a half to two ounces of chloroform (according to age and size) is put on the pad, the cap buckled on, and the colt is run out at once as quickly as possible to the field where the operation is to be carried out—usually, say, from fifty to a hundred yards. By the time he gets there he is invariably dazed, and you can at once walk right up to him and commence putting your ropes on, and by the time you have him down and tied up he will be sufficiently under to commence the operation. Everyone has their favourite method of roping, and I have mine. I don't think it has any particular advantage over the customary neck rope and side lines (except one which I will mention later) if you are not giving chloroform standing, but if you are, I think it has, so I will describe it also, although no doubt it is familiar to many of your readers. I use a single stout rope, $8\frac{1}{2}$ yards long, with an eye in one end. Making a noose, I get it on the near fore pastern, carrying the free end round the near hind, and give it a twist. Then across to assistants on the offside, who throw by pulling on the two legs at right angles to the colt (just as many throw calves); at the same time I seize the tail and materially help in tipping him over. By this time the struggles are usually feeble and aimless, and there is no difficulty in passing the end of the rope under the neck, see-sawing it to behind the withers—then catch up the off-hind foot with it, and pull it down to the shoulder. This makes a perfect back rope. Now take two more turns round the pastern, then back around the gastronomic tendons and forward round the front rope; repeat and fasten. This bends the hind leg and pulls it up out of the way for operating. The off-fore can either be left loose or, if the men at the head are nervous, tied with a separate short rope by bending the leg on itself. It must not be fastened to the other rope; leave it free, whether doubled up or not. I learnt this method some thirty-six years ago from the late Mr. R. G. Verney, of Stratford-on-Avon, who averred that he and his father before him had thrown many hundreds (if not thousands) of colts in this manner and never had a broken leg or back. His theory was that by tying in a "three-cornered way and leaving one leg free, the colt couldn't get an even strain on his back, and the rope as placed on the off-hind acted as a thigh hitch. Whether there is anything in it, or whether it is purely a matter of luck, I am not prepared to say, but as I have also been fortunate with it, I naturally think it a good method.

GENERAL ANÆSTHESIA IN BOVINES.

By ARCHIBALD EDGAR, M.R.C.V.S.,
(*Withorn.*)

Now that the subject of general anæsthesia is the topic of conversation wherever members of our profession meet, a short article on the application of anæsthetics to bovines may prove interesting to the older members of the profession and instructive to beginners.

The question is often asked—Are bovines suitable subjects for the administration of chloroform ? So far as my experience goes, they are, and I would add " very suitable subjects " ; in fact, I know no animal that will go under the influence of chloroform quieter and with less excitement than a dairy cow. The reason that I have formed that opinion may be caused by my experience being chiefly confined to parturition and eversion cases, where the animal is naturally inclined to keep the recumbent position. If they are anæsthetised in the standing position, when once they go off their feet they don't as a rule struggle and try to get up, as a horse is inclined to do, and if done lying down they very rarely attempt to get up.

The chloroform is administered in much the same way as to the horse, with the exception that in the horse the muzzle is applied over the upper jaw only, and in the cow both jaws are included in the muzzle. The dose and general effect is much the same in both subjects ; the cow will not jump to her feet after the operation as quickly as a horse, unless forced to do so. It is not necessary to secure a cow's legs.

There is one difference in operating on the horse and cow under chloroform, and it is an important one to the beginner. A horse will lie flat on his side for hours without any harm, but a cow (particularly if on a full stomach) will not lie long before she becomes tympanitic, and if she is not raised on to her sternum she may suffocate.

In order that the procedure may be better understood by beginners, I will describe my last three chloroform cases. Strange to say, two of my recent cases were torsion of the uterus. It is rather unusual to have two cases of torsion in a fortnight.

The first case was an Ayrshire cow, bought at a market on Monday, February 2nd, and brought home by rail on Tuesday. On arrival home, the owner noticed her straining as if for calving, but as no water appeared, and the symptoms were not urgent, this was allowed to continue until Friday, February 6th, when she went off her food and I was called in. On examination, I found a torsion. Had the cow removed for byre into a nice roomy loose box, well bedded with straw. The dairyman was my only help, to begin with.

A rope was fastened to her horns and the muzzle applied with about 2 oz. chloroform. In two or three minutes she commenced

to sway, but did not go down until I put an ounce more chloroform on to the cloth. This soon had the desired effect. A good pull at the tail and she went down and never gave a struggle ; one turn over the body and the torsion was reduced. The os was not sufficiently dilated to proceed with taking the calf away, so the muzzle was removed and the animal packed on her sternum. Instructions were given that if the cow did not calve in 12 hours, to let me know. She did not calf in the time. On my second visit, one foot and head were through the os and as the other foot was easily brought into position, the cow was not chloroformed again.

The second case was on July 25th, also a torsion. The animal had never been off the farm. In this case the cow was lying down, so I loosed the neck chain, fixed a rope round the horns and applied the chloroform in the usual manner. The cow never attempted to get up, but showed a little more excitement than usual by tossing her head and pressing the muzzle against the wall, breathing heavily ; wild appearance, much resembling a cow going into a fit. This stage passed very quickly, and when under she was pulled on to the walk of the byre. She had to be turned two full turns before the torsion was reduced, but calved a living calf quite easily, although it came hind legs first.

The third case was one of difficult parturition—July 28th.

This cow was also in the recumbent position, and was treated the same as Case 2, but she rose to her feet after the chloroform was applied, and had to be pulled down by the tail. She never gave a struggle and showed no excitement. She was under the influence of the drug for an hour. By the time I had washed up she was sitting on her sternum as if nothing had happened.

These cases are very typical of the way bovines act under chloroform and the beginner need not have any fear of trying it. He may meet an excitable case at times, but if he lets the excitement be on the cow's part only, keeps cool himself, and keeps on applying the drug, the animal is bound to go under.

Poultry also take chloroform very well. I have only tried it in three cases. A very small dose put them over, and they seemed none the worse afterwards.

VETERINARY PRACTICE IN IRELAND.

By MAJOR D. M. STORRAR, F.R.C.V.S., T.D.,
(*Crumlin, Mon.*)

THE situation in Ireland at present and the dastardly attack made upon a member of our profession reminds me of an incident that occurred to me when practising in Ireland during a rather disquieting time, viz., from 1879 to 1889, happily without any bad result. The

Land Leaguers were the troublesome " bhoys " in those days and their sport was shooting landlords and other agents, or anyone who did not agree with them regarding the possession of land.

One got quite accustomed to hearing of landlords and other agents being fired at, so much so that when a shot was heard the general expression was : " Hello ! another landlord gone." At that time one knew what the " disturbers " wanted and they have got nearly all they were agitating for, but I doubt if the Sinn Feiners of the present day know what they want. If the " ould " country was left alone by the agitator, it would be the best and cheapest country in the world to live in ; the people are the most hospitable ; all sportsmen (every man, woman and child) and lovers of animals ; and the veterinary profession holds a better social position in Ireland than in any other place I know. But I am nearly forgetting the incident. I was sent for by a Resident Magistrate to see a horse at his place, some twenty miles from my home. I travelled by rail to C——— Station, where I was met by the R. M.'s wife, with wagonette and pair of horses. The coachman wore a belt, with a brace of revolvers stuck in it, round his waist, the lady also had a belt with a revolver. A car with two police took the lead and another car with two more police followed after us to the R. M.'s house, about two miles from the railway station. On driving down the avenue I noticed some dummies, like " Aunt Sallies," at intervals on the lawn, and upon enquiring what they were I was told that the R. M., who never travelled without a Winchester rifle, practised firing at them as he drove to and from his house. After seeing my case and finding I had several hours to wait before I could return (as trains were few and far between in those days), I was entertained by the R. M., who explained to me the efforts he was making in his district to try and quieten it, and also teach the tenants who were anxious to live in peace how to defend themselves from the attacks by " moonlighters," etc. I saw several engaged in revolver practice, making a very poor attempt at hitting the gable end of a house. I was asked by the R. M. to dine with him, and on entering the dining room my attention was drawn to a thick mahogany table that was turned on its side and placed against the French window ; this was to prevent anyone firing at us from the shrubbery outside during dinner, and as the table was pretty thick I did not feel so nervous that I couldn't eat my dinner. During dinner the butler came in with a box that had just arrived. This turned out to be a fresh supply of revolvers from Dublin Castle ; and here I would remark that the R. M. was what was called a " marked man," and had been warned by the Castle to take every care of himself ; hence the precautions. After dinner (it was then getting nearly 10 p.m.) the R. M. remarked that he

hoped I would not mind walking to the station as he never, unless absolutely obliged, sent any of his conveyances out after dark. As the station was a good two miles off and the road lay through a very dark, thick wood, I did not relish the idea very much, but said I didn't mind, and to my great relief he said, " Of course, I shall send an escort with you." The escort consisted of a policeman and a soldier, each carrying a Winchester rifle, a bull dog, and a retriever, both of which seemed rather uneasy as we tramped along. However, nothing happened and I made up my mind that the next time I had to visit my case I would go at a time to enable me to return in daylight.

PHANTOM PREGNANCY IN THE BITCH.

By HENRY B. EVE, M.R.C.V.S.,
(*Folkestone*).

Subject.—A pedigree white bull terrier bitch, aged 12 years, suffering from obesity, habitual constipation, anæmia, and fainting attacks occasionally. The owner thought she was in whelp, but not mated this time unless unknown to him accidentally. However, had been on a false heat.

History.—As he described. The bitch I had attended before for dystophia and constipation. She had been delivered of pups, which at times were born alive, at others dead. Owner thought that she had perhaps dead pups inside her.

Symptoms.—The bitch appeared dull, languid, listless, disinclined to move, very swollen in abdominal region, which was enlarged; pendulous, constipated, big and hard in the right flank, suggesting fœcal impaction, and behaved in every respect as if going to have a large litter. There was an accumulation of milk in the mammary glands, and a brownish discharge issuing from " vagina." The bitch sat on her haunches, with elbows turned outwards, which relieved the breathing temporarily. During the act of locomotion, when made to do so, she showed general debility and paralegia, staggered like " vertigo, " and urination was suspended. Pulse was weak, irregular and intermittent, temp. sub-normal. Respiration accelerated during movement, shallow otherwise. Dulness was manifested on percussion and fluctuation was especially noticeable on " percussion " of the abdomen, which act caused evidently great distress in breathing, bordering on collapse. There was no œdema of the limbs noticeable. Auscultation revealed " heart disease," which I diagnosed as " mitral disease," complicated by liver trouble (chronic).

Diagnosis.—Heart disease complicated by chronic liver trouble and ascites.

Prognosis.—Unfavourable ; advised destruction, but the owner wished for treatment, the dog being a great pet.

Treatment.—Gave medicinal paraffin internally, and gastro-intestinal lavage and glycerine suppositories to overcome the constipation. Hyp. inj. of camphor oil sterilised (P. D. & Co.) to act as heart stimulant, which acted well for a time and seemed to give relief. Then resorted to (Nitro-glycerine Co.) (P. D. & Co.) nitroglycerin, Tinct. strophanthus, digitalis, belladonna tablets given with brandy and water. The bitch improved for a time and walked about, urinated voluntarily (previously catheterised) and milk disappeared. Then I tried (P. D. & Co.) apocynum ext., which I've found excellent for dropsy, and acted well for a time. However, owner decided to destroy owing to leaving the district, and not wishing for quarantine regulations, I destroyed her with chloroform and asked for p.m., at which he was present.

Diet.—Brand's Essence, nutrient suppositories.

P.M. Lesions.—Revealed valvular disease of both sides of the heart, accompanied by fibrous thickenings, fatty degeneration of the liver, which was enlarged, complicated with " cavernous angiomatis." The spleen showed " Hæmorrhagic lymphadænoma " and lungs with " anthracosis." Ascites also present but no acute or chronic peritonitis. The latter I suspected. I sent the viscera to Prof. G. H. Wooldridge, F.R.C.V.S., who kindly examined them and confirmed the lesions present, which were interesting.

Remarks.—The bitch was thought to be at the change of life period by owner, which was quite likely, seeing the age of animal. The liver and heart lesions no doubt accounted for the " ascites " and spleen for the general debility. The former for the paraplegia and fainting attacks.

General Articles.

THE POISONING OF HORSES BY THE COMMON BRACKEN.*

(PTERIS AQUILINA L.)

By SEYMOUR HADWEN D. V.Sc (Pathologist) AND E. A. BRUCE, V.S., Assistant.

Veterinary Research Laboratory, Agassiz. B.C.

A disease known locally as Staggers has been prevalent on the Pacific slope for many years. It is characterised by uncertain gait, loss of equilibrium, general unthriftiness and unimpaired appetite. The greatest number of cases occur during the winter months, the disease being most common when the weather is severe and protracted. Treatment if instituted early is usually successful, but neglected animals generally die.

*The Department of Agriculture, Canada (Animals Board).

On all the farms where cases occurred, bracken (*Pteris aquilina L.*) was found in the hay. While it was thought that bracken might be the cause of the trouble, very little literature could be found on the subject. Various authorities have mentioned that the plant was suspected of being poisonous, but do not support their statement by any experimental evidence. The best description of bracken poisoning is given by Lander, in his book on toxicology, *i.e.*, "The poisoning of horses after prolonged feeding on bracken along with other forage is mentioned by the German authorities." Poisoning is thought to be due to the effects of an acid (pteritannic acid) similar to, and possibly identical with, filicic acid of male-fern. Bracken poisoning of the horse does not appear to have been reported in Great Britain, but quite recently we were advised by a returned army veterinarian (L. D. Swenerton) that he had seen some cases in the South of England that had been fed on ferny hay from Northumberland. At the time, however, he did not connect the bracken with the trouble, as at that time he had not seen our preliminary communication. In 1909-10 the British Board of Agriculture investigated a somewhat obscure disorder that occurred in cattle in the early autumn (August-November) after eating bracken. This investigation was confined to cattle and the results obtained show no similarity to the disease with which we are dealing; this may be due to the fact that green bracken was used; their findings, however, were inconclusive. We have never seen cattle or horses eat green bracken unless starved to it.

We have evidence that the disease occurs in Washington and Oregon as well as in British Columbia, and in view of the fact that *Pteris aquilina* has a very wide distribution it seems probable that the fern causes trouble elsewhere. During the hard winter of 1915-1916 the mortality amongst horses in the Fraser Valley and on Vancouver Island was very heavy. As an extreme instance we cite the following:—In the little village of St. Elmo, B.C., out of twenty-four horses owned by eleven farmers, sixteen died of bracken poisoning, four recovered, and the balance (four) did not take the disease. To determine definitely whether bracken was the cause of the disease known locally as Staggers or not, it was decided to conduct some experiments. Permission was obtained from the Veterinary Director General to buy the necessary animals and incriminated feed. As the disease has only been reported when horses have been confined, it was decided to simulate, in so far as possible, the conditions under which animals became affected. It was commonly believed by the majority of people that cold weather was partly responsible for the disorder, but the only bearing such has on the case is that during

cold weather the animals get little or no exercise and are not able to supplement their food by picking grass or other green food. The horses attacked are usually those that receive the minimum amount of care, but well cared for greedy horses may contract the disease through eating their bedding, which often consists of bracken that has been left in their mangers.

Notes on Experiment No. 1.

Two aged horses were procured and a supply of hay that carried 20 per cent. bracken.

One horse was fed the day after all fern had been picked out of it, the other animal received the same hay plus the fern. Average daily feed, control horse twenty-four pounds of clean hay; experimental horse seventeen pounds of hay and seven pounds of bracken.

No other food was given either animal.

Both horses were kept in box stalls and allowed no exercise.

April 1.—Feeding commenced.

„ 24.—Fern horse breathing hard; seems to drag his legs.

„ 29.—Fern horse shows slight signs of intoxication.

„ 30.—Fern horse shows undoubted signs of intoxication.

May 1.—Fern horse intoxicated, nearly fell when made to get over in his stall.

„ 2.—Fern horse much worse, was found down at 6.45 a.m., and could not be made to stand. Towards evening he showed a full soft pulse. Struggled now and then. Moved the legs continuously. Looked completely intoxicated. Pupils slightly dilated.

„ 3.—Fern horse, pulse sixty-four. Animal weak and had nervous spells. Trembling. Eats and drinks well. Distinctly intoxicated. Does not struggle. Fæces loose.

„ 4.—Fern horse much weaker; pulse eighty. Nervous spells more frequent. Animal so weak it can hardly get up on its sternum. At night was unable to raise its head off the ground, and though it could not masticate would grasp food between its teeth. Continually twitching. Blood taken coagulated in ten minutes; serum clear and yellow.

„ 5.—Fern horse very weak. Still having nervous spells. The head was drawn into the neck, the feet which were on the upper side would stand out stiff, the back would arch and all the muscles became tense. As soon as an attack was over the muscles relaxed

and the animal breathed heavily until restored. As the horse was battering himself about badly and was clearly dying, the carotid was severed and the animal bled to death.

Autopsy.

The stomach contained about two quarts of a sticky light olive green liquid, which proved to contain bile by Gmelin's test. There were some red spots at the junction of the cardiac mucous membrane. The small intestines contained some well-chewed food. All the other organs were normal except the kidneys, which appeared congested in the cortical portion. The brain also appeared congested. The blood clotted normally.

During the whole period of feeding temperatures were taken morning and evening; these proved to be normal.

The control horse that was fed on the hay out of which the fern had been picked, showed absolutely no ill effects.

Notes on Experiment No. 2.

As in the preceding experiment two horses were procured (one having served as control in Experiment No. 1), and a quantity of hay that carried a high percentage of bracken.

One animal received the hay after the fern had been picked out of it, the other received the same hay plus the fern. Average daily feed: control horse twenty-four pounds of clean hay; experimental horse, thirteen pounds of hay and eleven pounds of fern.

Both horses were kept in adjacent box stalls and allowed no exercise.

June 1.—Feeding commenced.

„ 23.—Supply of fern ran out; had to resort to cutting and drying freshly cut bracken, which could not be properly cured owing to continued wet weather.

„ 24.—A small amount of hay was received that contained a little bracken. It was not until July 6th, however, that a sufficient supply of dried fern could be obtained; therefore from June 23rd until July 6th the material fed was a poorly cured sample.

„ 29.—Fern horse shows yellowish red conjunctivæ.

July 1.—A careless attendant was caught giving the fern horse green clover; this, coming on top of our difficulty in procuring properly dried bracken, did not look any too hopeful for our experiment.

„ 8.—Fern horse was noticed to be staggering badly. When the head was raised the animal was inclined to fall.

July 9.—Fern horse worse. Pulse soft and weak, forty per minute. The urine was examined and found to contain no albumen nor sugar.

„ 10.—Fern horse progressively weaker. Shows distinct signs of intoxication. The eye has an intoxicated look. When the animal is pushed it sways to and fro. Appetite unimpaired.

„ 11.—Fern horse about the same. Pulse forty-two and weak. Intoxication marked.

„ 12.—Fern horse was found down in the morning, but was helped up. Pulse fifty-nine, weak and irregular. Respirations forty-seven per minute. Pupils slightly dilated. When head was raised a few inches the animal nearly fell.

„ 13.—Fern horse pulse fifty-two, weak and irregular. Head carried low.

„ 14.—Fern horse pulse same as yesterday. Pupils more dilated. Head carried very low.

„ 15.—The fern horse went down between 7 and 8 a.m., and could not be made to stand. Animal has nervous spells, twitching of the muscles, more especially of the face. Animal getting badly bruised.

„ 16.—Fern horse battered up badly. Pulse seventy-two and weak. Visible m.ms yellowish red. Temperature 99.5. As the animal was moribund, the carotid was severed at 11.7 a.m. Blood taken at 11.9 a.m. had set by noon (when it was first noticed).—Autopsy.

General condition, emaciated. Lungs normal but for some emphysema of long standing. Trachea and bronchi congested. Heart normal. Kidneys, cortex congested. Bladder normal. Spleen normal but for some old adhesions. Liver contained a few chalky deposits (degenerated parasites), and was congested. The duodenum contained bile and thick frothy mucus. The large intestines were normal. The most noticeable changes were found in the stomach, brain and spinal cord. The brain and cord were greatly congested. The stomach contained about a gallon of gelatinous fluid which contained blood and mucin; no bile could be demonstrated. The whole surface was covered with a sticky mucus which held minute particles of bracken. The villous mucous membrane was greatly swollen and congested.

During the experiment temperatures were taken twice a day; no abnormal temperatures were recorded.

The control horse showed no ill-effects from eating the hay out of which the fern had been picked.

NOTES ON EXPERIMENT NO. 3.

The subject is this experiment was the horse that had served as control in the two previous experiments. The animal was confined as were the former subjects and was fed with ferny hay just as it was received. The hay was found to contain 29 per cent. bracken. The approximate daily feed was $20\frac{1}{4}$ pounds; of this bracken composed about $5\frac{3}{4}$ pounds.

October 27.—Feeding commenced.

November 25.—Up to this time the animal laid down at night.

„ 26.—Did not lie down during the night.

„ 27.—Did not lie down during the night.

„ 28.—Animal went down at 3.15 p.m., was helped to rise. Temperature 99.8.

„ 29.—Animal down and cannot rise. Tetanic spasms, the head being drawn back. Pulse seventy-six, fairly strong. Temperature 97.4.

„ 30.—Animal much the same as yesterday. Temperature 100.3

December 1.—Animal not so violent as former subjects, otherwise much the same. Pulse eighty and weak. Temperatures 99.5 a.m., 100.9 p.m.

„ 2.—Animal found dead in the morning.

Autopsy.

Blood dark. Liver and kidneys engorged. Clots in heart. Lungs and spleen normal. Stomach contained dry ingesta and was distended with gas. At the cardiac end the mucous membrane was lined and crevassed; at the junction of the pyloric portion there was a deep erosion and under this was a gelatinous infiltration. The bottom of the crevasses was red, giving a raw-looking appearance. The duodenum was covered with a slimy thick mucus of a greenish yellow colour and had reddened areas. In the ilium the catarrhal exudate was of a greyish colour. The large intestines were more or less empty. The bladder was full of urine, faintly alkaline and containing albumin. The brain was congested and there were well marked hæmorrhagic areas under the pia-mater of the cord.

During the experiment temperatures were taken twice a day; no abnormal temperatures were recorded.

The hay fed to this animal was weighed carefully at each feeding; the total amount consumed was 670 pounds, of which about 29 per cent was bracken; the amount of fern fed was therefore 194.3 pounds.

NOTES ON EXPERIMENT NO. 4.

The subject in this experiment was a strong, healthy gelding. The amount of hay and bracken fed was as follows:—

From March 13 to April 2.

Fed 290.5 pounds of hay, and 93.5 pounds of fern; daily feed of fern equals 4.4 pounds.

From April 3rd to April 23rd.

Fed 406.4 pounds of hay and 51.6 pounds of fern; daily feed of fern equals 2.4 pounds.

From April 24th to May 23rd.

Fed 333 pounds of hay and 202 pounds of fern; daily feed of fern equals 6.9 pounds.

May 19.—Up to this date the animal appeared normal.

„ 20.—Conjunctivae yellowish red. Shows slight symptoms.

„ 21.—Abdominal breathing noticed. Pulse 24.

„ 22.—Staggering. Eyes have staring look. Conjunctivae yellowish red. Not feeding well.

FIG. 2.—Stomach of Case No. 2. (Note mottled appearance).

May 23.—Animal off feed and staggering badly. Temperature 99.4. Pulse 26.

„ 24.—Animal quite intoxicated. Pulse 32.

„ 25.—Staggering badly. Fell down but got up. Was turned out into yard. Temperature 99.4. Pulse 40.

„ 26.—Staggering badly. Animal killed.

Autopsy.

Carcase in fair condition. Icterus. Liver congested. Lungs emphysematous. All other organs normal with the following exceptions: Brain greatly congested, the convolutions being sharply defined

on section. Cord congested. Stomach, regurgitation of food, small amount of bile present, cardiac portion showed some old eroded patches, pyloric portion showed reddened areas with small hæmorrhages. Small intestines bile stained and empty except for a slimy yellowish green mucus, some of which was in clots. Bladder full of urine, no albumin or sugar present.

SUMMARY OF EXPERIMENTS.

The foregoing experiments indicate the cause of "staggers" in horses to be due to the ingestion of dried bracken over a certain period and under certain conditions. No toxic properties can be attributed to the hay, as an animal fed on hay out of which the fern had been picked remained absolutely normal. Of the four animals that developed the disease, one showed symptoms on the 24th day and was dying on the 35th day, when it was put out of its misery. The second horse did not show marked symptoms until the 38th day,

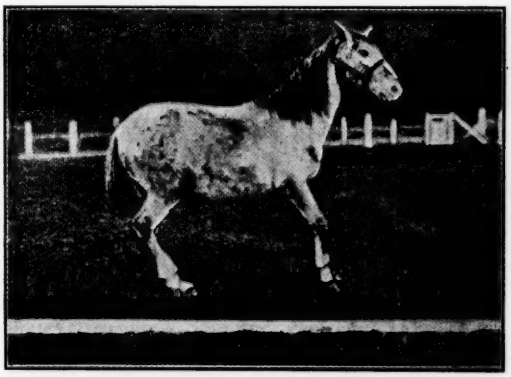

FIG. 1.—The typical staggering gait.

and was dying on the 46th day, when it was killed. The length of time it took the second horse to develop symptoms as compared with the first was no doubt due to the fact that for about twelve days properly dried bracken could not be procured, and also to the mistaken kindness of a careless attendant who was caught giving the animal green clover. The third horse, which had served as control in the two preceding experiments, was fed on hay exactly as received from a local source. The hay carried 29 per cent. bracken and caused the death of the animal in 36 days. The fourth experiment was somewhat different to the others; this animal was fed 4.4 pounds of fern per day for three weeks, and was then reduced to 2.4 pounds per day for a further three weeks with no apparent ill resulting. Upon increasing

the daily feed of fern to 6.9 pounds definite symptoms of the disease were noticed on the 29th day (after this increase) and the animal was killed on the 35th day.

Judging from the foregoing, it can be assumed that an addition to the daily diet of about six pounds of dried bracken will kill a horse in about one month.

PATHOLOGICAL FINDINGS.

The brain and cord showed marked congestion. No bacteria were found either in their substance or fluids.

The stomach is the organ chiefly attacked, as would be expected from the nature of the food, which is highly acid. The pyloric end shows the greatest change ; fig. 2 illustrates the condition to a marked degree. The m.ms. have a mottled appearance, and bile stained, and in some places there are bleeding eroded areas.

SUMMARY.

In the March number of *The American Journal of Veterinary Medicine*, L. H. Pammel, of the Iowa State College, reviewed a preliminary communication made by us before the British Columbia Veterinary Association at Vancouver, B.C., on December 6th, 1916. In view of Dr. Pammel's well known association with poisonous plants, it may be of interest to quote his words, viz., " The bracken is an extremely common plant along the entire Pacific coast, especially in Oregon and Washington and from British Columbia to Alaska. The experiments seem to show that the bracken is poisonous. This fern, like many others related to it, has been regarded as poisonous. However, there are few definite facts on the nature of the poisoning. Many, if not all, of the ferns contain filicic acid and a fixed poisonous oil. In this case, as in others, we need some careful chemical investigations to prove the poisonous nature of the plant. We hope that this investigation will be forthcoming."

While up to the present we have not had any satisfactory analysis made, the physiological experiments cannot be gainsaid, and further, we draw attention to the fact that on all farms visited by us where the disease existed, bracken was present in the hay.

That the toxic principle is insoluble in water has been established, as in addition to the feeding experiments already mentioned a watery extract was prepared and administered to a horse, twice a day for some sixty-four days. This extract was concentrated down until one cubic centimetre was approximately equivalent to one gramme of the dried fern. The usual daily dose was two thousand cc., but one day as high as five thousand five hundred cc. was administered. In all the animal received the equivalent of about two hundred and ninety pounds of fern, during which time he was only fed clean hay and was

not allowed any exercise. No symptoms of bracken poisoning were noted, notwithstanding the fact that this animal had consumed, in the form of an extract, one hundred pounds more than the amount of dried fern necessary to kill experimental horse No. 3.

Emphysema of the lung has been noted, and congestion of the liver. The blood was normal no bacteria were found, and there wae no variation in the percentages of the different leucocytes.

The disease as it occurs on the average farm in British Columbia is brought about in the following manner :—

Bracken (*Pteris aquilina L.*) is found in a large amount of the hay grown in the lower parts of the province, especially so on newly cleared or poorly worked farms, and it is on such farms that the disease is most common. During the severe weather the animals are confined for a long period, and none too liberal an allowance of hay given each animal, the result being that horses that otherwise would leave the bracken in their mangers are forced to eat it. (We have never seen an animal eat green bracken, and as a general rule horses do not eat dried bracken unless forced to, except greedy horses that eat their bedding, which often consists of fern rejected out of their hay.) The affected horses in nearly all cases received but little else than hay in the shape of food ; where animals were given plenty of hay and roots, with occasional feeds of bran and oats, no trouble of this nature occurred. In this connection it may be remarked that no cases were reported in the city stables. While it is evident that a small amount of bracken can be eaten with impunity, large amounts, coupled with unhygienic surroundings and lack of variety in diet, will bring on the trouble.

Though the cause of this disease had not been definitely established heretofore, veterinarians have been quite successful in treating the malady if they were called early enough, and when at all possible farmers are strongly advised to summon such professional aid as is available.

Symptoms.—Usually the first indication of trouble noticed by the owner is an unsteady gait upon taking the animal out to water. The appetite is usually good. Animal inclined to constipation. Eye congested. Flanks tucked up. Nervousness. In the later stages if the head is raised the horse may fall. Stands with the legs spread and has a distinctly intoxicated look. Greedy horses are most liable to attack.

Treatment.—The treatment recommended by Dr. S. F. Tolmie, of Victoria B.C., who has had a great deal of experience with such cases, is as follows :—Remove all ferny hay and bedding. Administer a good brisk purgative, such as : Barbardoes aloes seven drachms,

calomel one drachm, and ginger one drachm. Half-ounce doses of potassium bromide twice a day in the feed or drinking water. One to two drachms of potassium iodide three times a day is recommended. Give medicine in the feed or drinking water or with a syringe. Feed laxative food such as bran mash and carrots. Give enemas if necessary. When animal is very groggy place in slings with extreme care, avoiding excitement as much as possible. Tie with guy ropes on both sides, in front and behind. Slings should be applied so that the belt presses lightly on the abdomen when the animal is standing erect, but so that on the least flexion of the joints support will be given. In some cases cold packs to the head are recommended. Recovery after this form of treatment is the rule, but if begun too late, losses will occur. Care is needed in giving medicines to avoid unnecessary excitement, as rough handling will invariably aggravate the symptoms.

To the farmer who is unable to secure professional aid we would suggest the following treatment :—First remove all ferny hay and bedding. Give a quart of raw linseed oil, taking especial care that none falls into the lungs. Give good clean hay, warm bran mashes and roots. The horse should be kept as quiet as possible, owing to its nervous excitability. Warmth is of aid in combating the affection whilst a cold draughty stable tends to lower the vitality.

The Eradication of Bracken.—We have taken some pains to find out if there was any bulletin or other information on the subject. The only bulletin we can find dealing with this matter is one written by H. R. Cox, of the United States Department of Agriculture, entitled, " Eradication of ferns from pasture lands in the Eastern United States " (Farmers' Bulletin, 687). He recommends methods which can be used in the Eastern States and says that the Department of Agriculture has not investigated the fern problem in the West. Various methods have been tried, but the two that have given the best success are spraying with solutions of salt and cutting. Two treatments a year, either spraying or cutting, are advised. The best time to treat ferns is stated to be just before spring, or about the middle of June and the middle of August. Cutting is somewhat cheaper than spraying. In the East with ferns at an average thickness in a pasture a man ought to cover about $2\frac{1}{2}$ acres a day ; in the West where the ferns grow much more vigorously the labour entailed would be greater. Probably the best method for the West would be a combination of cutting and choking out the fern with red clover, as a good stand of clover tends to weaken the fern. Since bracken has now been definitely proved to cause poisoning in horses, we would urge all farmers to make determined efforts to get rid of the plant and to keep all fodder containing it away from their horse stables, even in the shape of bedding.

Acknowledgments.—We beg to acknowledge the valuable information given by Drs. Tolmie and Derby, especially as regards statistics and treatment of the affection. To Dr. F. Torrance, Veterinary Director General, we owe thanks for his interest in our investigation.

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ADDENDUM.

Fatalities Following the Ingestion of Green Bracken.—While we had heard indirectly that animals might suffer from eating green bracken, it was not until quite recently (October 1st, 1917) that any cases came directly under our notice.

Two horses owned in the village of Agassiz developed symptoms of narcotic poisoning while confined in a small pasture. The symptoms were exactly similar to the experimental cases recorded in this paper. When seen neither animal could stand, though earlier in the day they had been able to do so. The evidence as to the condition being brought about through the ingestion of green fern was indisputable. What grass was in the field had been nibbled so short that the animals were forced to eat the ferns. The most conclusive piece of evidence we found was the fact that the horses had been putting their heads through the wire fence, and that they had left nothing but the fern stalks within the area of their reach. Beyond this area was a green bank of fern. As stated before, the grass had been eaten bare all over the pasture, and the only other vegetation for the horses to eat was bracken, which was very plentiful.

One of the horses died after being down for three days, and the other recovered slowly. The treatment which had been given these animals was of a very rough character; apart from a preliminary dose of arecoline the animals received but little attention, though their food was changed.

We have stated that horses will only eat dried fern when forced to do so, and from the above it is apparent that the same thing applies to the green fern. The only exception to this rule may be that an otherwise well-fed animal will sometimes nibble at any green plant within reach.

S. HADWEN.
E. A. BRUCE.

EXPERIENCES OF A VETERINARY SERGEANT WITH A VETERINARY HOSPITAL IN SALONICA AND SERVIA IN 1915.

By SERGEANT MILLER.
Late Royal Army Veterinary Corps.

THE Hospital left Woolwich in June, 1915, and proceeded to Bulford for a few weeks. We were doing duty to help No. 4 Veterinary Hospital at Bulford till we got orders to proceed overseas. We left Devonport on the *Minnewaska* about the middle of July, 1915. Where we were going to nobody knew. Well, we set sail, and the first place we called at was Gibraltar. We arrived there after about 4 days' sail and had a good passage. When we set sail from Devonport we had some R. G. Artillery on board and we had to take charge of their horses. There was not much sickness, just a few pneumonia cases, and we only lost one horse all the way until we landed at Alexandria. We went on to Malta in another 4 days' sailing, with a good passage all the way. The submarines were the things we " got the wind up " about, because they were very troublesome at the time. We arrived at Alexandria after about three weeks' sail, and we thought that we were going to stop there. We stayed on the ship all night and the next morning had orders to disembark. We got off the boat that day and went to No. 11 Veterinary Hospital at Garbary Camp, just on the outskirts of Alexandria, when we had orders to embark for Salonica. We struck camp at 4 a.m., about the middle of October and marched to the docks for embarkation about 7 in the morning. We had to take 375 horses with us to Salonica on a boat called the *Cora*, which used to be a mail-boat, but had been made into a transport ship. The horses that we had to take were French Yeomanry horses, and a fine stamp of horses they were, as every horse that went on that ship cost £70 on the average. We got the horses on the boat the same day, and we were all ready for sailing that night at 7, but we got orders about 4.30 a.m. that we were not going out that night, for reasons we did not know then, but the next morning we got to know that the Captain had got orders not to proceed till we had a gun put on the forecastle and one aft, so we had to take the horses ashore again for another 7 days, until the guns were put on the ship. We laid on the shore for 7 days and had the horses picketed there. We had to exercise the horses about 3 a.m., as it was too hot through the day. It was a good job that we got the horses nice and fit for the sea voyage, because we had a terrible voyage. After 7 days, lying on the sea-shore, we got orders to embark again. We were glad when we got the orders, because it was not very pleasant lying out on the sand. We were all on board ready about four in the afternoon and left

about ten at night, and a fine night it was. When we awoke next morning we had got into the Ægean Sea; we thought we were in luck again for fine weather, but our hopes were dashed to the ground about 1 o'clock that day, and we soon got to know what a storm was. We were just where four seas meet—the Sea of Marmora, Ægean Sea, Western Atlantic and the Mediterranean. We had our horses on board, and, as it was only a small ship we had had a job to get them all on. There were two decks down below, which held about 350, so we had to put temporary standings on the forecastle of the ship for the other 25. We had to sleep on deck or anywhere. The storm started at about 2 o'clock the next afternoon and it got worse as the afternoon went on, till at about 6 o'clock nobody was allowed on deck. It became terrible as the night went on. About midnight we thought of Old England, the land we had just left, and felt that our time had come; but we put our trust in God and the captain of the ship. The storm kept up all through the night and the next morning it was no better, but about 2 that afternoon it went down suddenly, so much so that we could not believe it could possibly subside so sharply. The horses were the first things requiring our attention. On the lower decks there was a lot of sickness amongst them, but on the whole they had stood it well. It was a good job those horses were fit when they came on board; that 7 days we had them on the shore at Alexandria was a grand thing, because they were got fit to stand the voyage, or else we might have lost more. The two lower decks had come through fairly well, but when we went on to the top deck, where we had made the temporary standings for the 25 horses, it was a terrible sight that met our eyes. The sea had been so rough that it had washed all the standings down. When we got half the wreckage off, we saw there were some horses still alive. There were 10 dead, so we had to see about the other fourteen. One of the horses had crawled under the legs of the others and had saved himself. Those poor animals lying there looked like drowned rats in a trap. We had to destroy all the rest with the exception of the one which, as I said crawled under the others and was saved. We had to get to work to put them overboard. We got the winches started and put them into the water. After another two days' sail we arrived in the Gulf of Salonica, and glad we were when we arrived. We got orders about 9 p.m. that the horses had to be got off that night to go up country, so we had to start to get them off at once. When we got started, we were not long in getting them off, disembarking the last about midnight. We had to get the horses up the country and they had to go about 40 miles by road, and bad roads they were, too. After we had got rid of the horses we had to come back to the docks, as we had all

our stores and transports and all the men at the docks. We disembarked two days after we landed. We got motors and loaded them up and off we started up country, where we had to pitch camp about 10 miles up. We stopped there two days. The only rations we had were bully beef and biscuits, but everybody was cheery; the officers had just the same hardships, but we all pegged in together and were as happy as we could make ourselves. We stopped there for two days, when we got orders to move further up. We had some awful weather, as it was terribly cold. December and January are two awful months in Greece, and we found it very cold after being in the climate of Egypt. We got the hospital started and we got the ground for it. It was very wet and we were lying in rushes; the hospital was on the same piece of ground and the cold was awful. We soon started receiving horses and mules—mostly mules—and we had to go up and bring them down. It was awful bringing them down through the hills as there were no roads. If we had horses sick and unable to travel, the only thing we could do was to shoot them and bury them on the road. We could not get ambulances as there were no roads, and the Engineers had only just come on the scene to make them.

SOME EXPERIENCES WITH A MOBILE VETERINARY SECTION IN THE DARDANELLES IN 1915.

By SERGEANT SPENCER

Late Royal Army Veterinary Corps.

Leaving Alexandria on July 4th, 1915, with a draft of men, I was ordered to join a Veterinary Hospital Section which had been on the Dardanelles Peninsula doing duty for some time previously.

We landed amidst the noise of shot and shell in a country which in time of peace would be anything but beautiful, hilly and rugged, devoid of all trees and herbage; a shortage of water, and the soil of which was a burning sand.

Our forts occupied a stretch of land about four miles of frontage in our first line trenches, with a depth of three miles in the rear of the sea, and in all, five lines of trenches.

Our headquarters were close to the sea coast, about half a mile from Saddle Bar, this village being in ruins, also within sight of the Cape Helles Lighthouse, which I saw demolished by gunfire from the *Queen Elizabeth*. We had a very good view into Asia Minor. Our work, which was carried out continually under shell fire, mostly consisted of attending to the wounded and sick horses for the ammunition and general transport. Many cases had to be attended and watered right up in the front line of trenches. The horses were only watered once

in the 24 hours and often as early as 4 o'clock in the morning, owing to the water being very scarce and the very difficult conditions of getting it to the needed places. I can say that we were really only safe when in the dugouts. We had many wounded and sick horses killed by shrapnel when under treatment, besides suffering several losses amongst my comrades at different times. My stay in the Peninsula lasted over a period of four months and before my leaving all the horses were replaced by Indian pack-mules.

Before concluding this, I should like to add one incident that I shall never forget, and that was the dreadful sight of the sinking of the *Majestic*, which before my leaving was showing about 8 to 10 feet out and above water.

I was eventually sent sick to Alexandria and invalided home to England early in December.

ACORN POISONING.

By L. W. WYNN LLOYD, M.R.C.V.S.,
(*Carnarvon.*)

In December, 1917, Mr. E. H. Pratt, of Northallerton, contributed to a contemporary journal, under the heading, "Undiagnosed," a record of cases of an obscure complaint in young horses. Mr. Jas. Brown, of Ramsey, I.O.M., replied with a description of similar cases seen by him. This was followed by a note in the next issue by me on several cases of the same nature.

The symptoms in the average animal were :—Temperature variable—ranging from 99° to 104° F. Pulse accelerated and feeble. Injected mucus membranes. Muscular tremors in most cases. Inability to stand for any length of time and later complete prostration. Obstinate constipation. The fæces dark coloured and often coated with mucus. Urine dark coffee-coloured and flaky, leaving a considerable mucus sediment when allowed to stand in a test tube.

Autopsies were disappointing. No intestinal lesions. Nephritis in nearly all cases and always a quantity of dark-coloured urine in the bladder. Partly digested acorns in stomach and intestines.

In concluding my note at that time, I said :—"Four conditions were common to all my cases :—

1. They were all females (I have since seen males affected).
2. They were out night and day in winter.
3. None were plethoric animals and they graze on poor land.
4. The pastures had a number of oak trees on and around them.

"What can be the cause and nature of this condition? In view of our present meagre knowledge of the pathology of azoturia, would it not be reasonable to suggest that these animals suffered from a form

of this disease ? Would ingestion of acorns cause the blood to become surcharged with proteids and bring about the lesions—the tannin causing the constipation ? "

Since writing the note just quoted, I have seen several other cases—three this winter. The last one, an aged mare, recovered after about a week's treatment with cathartics, frequent enemata, stimulants, injections of strychnine, etc. I am now convinced that I have been dealing with acorn poisoning. There is evidence in almost every instance that the animal had eaten a quantity of them. The pastures were bare and poor and the acorns fall in great numbers at that season (November to January).

A sample of urine from one case was sent to Prof. Ramsden, of the Bio-chemical Laboratory, Liverpool University, with a brief history and a suggestion that acorns might have caused the mischief. He very kindly examined the urine and I give his report.

Bio-chemical Laboratory,

Dear Sir, The University of Liverpool. 30.10.19.

At your request I am reporting to you the result of my examination of the urine of a filly recently dead, under circumstances suggesting that consumption of acorns was responsible for the death.

The urine contains much hæmoglobin—about as much as in 50 times diluted blood. No red corpuscles, therefore the hæmoglobin has presumably passed the kidneys already in solution and there has been considerable hæmolysis inside the blood vessels—a sort of " black-water " urine.

Albumin is plentiful. There is also a strong glycosuria—as much as 1.7 per cent. of glucose. These findings would, in a man, strongly suggest poisoning by foodstuffs rather than by parasitic or bacterial invasion—the combination of glycosuria and hæmoglobinuria, I mean. Whether they have this significance in a horse, my knowledge does not justify me in expressing an opinion.

As regards the acorns submitted, they were not invaded by moulds or other parasites. I have not succeeded in discovering any investigations on acorns in the literature or any reference to their being poisonous. But I hope to cover a larger area and if I find anything significant will let you know.—Yours faithfully, W. Ramsden.

Translations and Abstracts.

STERILITY OF THE HE-GOAT.

Contrary to what one observes in other races, and notably in bovines, sterility of the he-goat is more frequent than that of the she-goat. This sterility is partial and temporary, or complete and permanent.

Sterility is partial and temporary—(1) when the he-goat is weakened by illness ; (2) when he is insufficiently nourished ; (3) when he covers too large a number of females ; (4) in certain cases of onanism. The sexual aptitudes of a he-goat are very variable and there are some examples of exceptional vigour. One Flemish " billy " covered 17 she-goats in a single day and 350 during the season ; in every case fecundity was obtained at once. Sterility is complete and permanent :—

1. In cryptorchidism and hermaphrodism.
2. In obstruction of the seminiferous canals.

The first-named anomalies are more frequent than in the case of the stallion and the bull ; they are transmitted by heredity. The most common cause of permanent sterility is obstruction of the seminiferous canals (22 cases out of 25 investigated). This is due to thickening of the canals of the testicles, of the epidydymis or to occlusion, most frequently a combination of all three. The ailment is difficult to recognise at first, but later on the testicles becomes slack and shrivelled. The spermatic fluid does not contain spermatozoa and its examination constitutes the best method of diagnosis. Sterility of the he-goat is prevalent in all countries ; in Germany it is chiefly observed in the Kingdom of Hesse. It is wise to always make special enquiries as to the stock-getting record of new purchases, and in case of failure to fructify, to make a systematic examination of the spermatic fluid.

Revue Gén. de Méd. Vet. G. M.

FORMALIN IN THE TREATMENT OF MASTITIS.*

By J. N, FROST.

(*Professor of Surgery, Cornwall University Veterinary School, U.S.A.*)

For our purpose we will divide mastitis into two groups, particularly as to cause : first, mastitis caused by infection of various forms ; second, mastitis due to other causes than infection. It is of the first group that we wish to speak.

In attempting to overcome the infection I had used the injection of boric acid solution, also oxygen gas, without satisfactory results. I had tried the injection of equal parts of alcohol and glycerin as recommended by Schmidt of Denmark. This likewise was not satisfactory and in some cases seemed to increase the infection.

In treating diseases of the respiratory and genito-urinary tract we use antiseptics which, given per mouth, are eliminated through these tracts. Why, then, should we not treat infection of the udder in the same way ?

In reporting for the committee on therapeutics at the 1914 meeting of the New York State Veterinary Medical Society, I reported the good results obtained by feeding methylene blue in cases of mild

infection of the udder. I also used methylene blue in combination with turpentine, which is likewise eliminated through the milk.

At the 1913 meeting of the American Veterinary Medical Association, Dr. Klein gave a paper on " The Therapeutics of Parenchymatous Mastitis," in which he tells of using boric acid per mouth and finding it in the milk in twelve hours. He also speaks of using urotropin and finding formaldehyde in the milk in twenty-four hours.

At the conference last year Dr. Moak, in speaking of streptococcic mastitis, gave the impression that it was incurable, but later, in speaking with him I was unable to find any definite line of treatment which he had used. I had already cured some cases of streptococcic mastitis with turpentine and methyline blue, but realised that something stronger was needed.

It was then I decided to try formalin, and the results were so gratifying in the first case that I began a series of experiments with regard to elimination and dosage.

Quitman gives the dose for the cow as 15 to 30 minims and advises not to continue the use over too long a period, as it is supposed to lessen or dry up the secretions from the gastric and intestinal glands and thus produce constipation or impaction.

With the idea of avoiding this we began with the dosage at one dram three times a day and alternated with one ounce of turpentine twice daily. As this produced no bad effects we gradually increased the dosage until we believe the correct dose to be one ounce daily.

We have given 25 c.c. twice daily for two weeks and failed to see that it has produced bad effects in any way, either by loss of appetite, constipation or impaction. This cow at the time was being fed on dry hay and grain. We have also given 50 c.c. at one time without bad effect.

As to the method of administration we have given it undiluted in capsule. It may also be given in milk or oil. In combination with the latter we get the laxative effect of the oil, which would be beneficial in treating mastitis.

ELIMINATION : In determining the length of time after giving formalin before it was excreted in the milk we used Leach's hydrochloric acid test for formalin. When one dram of formalin was given faint traces could be found in the milk in twenty-four hours. When 25 c.c. of formalin was given three hours after water and seven hours after milking, it was found in the milk two hours afterwards, and continued to be present for forty-eight hours. The largest amount was present from the eighteenth to the thirtieth hours.

We believe it advisable to supplement the formalin treatment with purgatives and diuretics, as they increase the interchange of blood in

the udder and hasten the elimination of waste products from the body It is also well to use the suspensory bandage to relieve the weight and tension on the tissues. Then by placing cotton inside the bandage and keeping it hot by applying water the pain in the udder is materially reduced. When left for the night the wet pack should be changed for a dry one to prevent the chilling of the udder. In hot weather cold water may be used in place of hot with equally good results.

In our work with formalin we have not used the above methods except in two cases where the animal was necessarily changed from ensilage to dry hay and in these cases salts were given to relieve any constipation which might result.

In giving the results of our work with formalin, we give one from each of the different forms with which we have been experimenting.

CASE I. Cow had calved eight months previously and was pregnant about four months. For the past two weeks she had given thick milk and the two posterior quarters were hard and firm. Cultures made from the milk of this cow were sterile from the fore-quarters and from the hind-quarters showed a pure growth of streptococci. The animal had been treated with home remedies and cow relief.

Gave one-half ounce of formalin and then followed by one dram dose three times daily, alternated with one ounce of turpentine twice daily. Eight days later the treatment was discontinued and on the ninth day cultures from the milk of all quarters were sterile. Five months later, after the cow had again freshened the cultures were again sterile and the animal averaged over one hundred pounds of milk daily for forty days.

CASE II. Cow had calved about four months previously and had been giving thick milk for five days. Cultures from the milk gave pure growth of streptococci from one quarter, mixed growth from another, a pure growth of micrococci from the third and a sterile culture from the fourth. Gave one-half ounce formalin, followed by one dram three times daily for five days. Cultures made from the milk on the ninth day were sterile.

CASE III. Cow had freshened four days before and had retained placenta. Was giving bloody milk from two posterior quarters. Cultures showed *B. coli* and micrococci. Gave twenty-five c.c. of formalin and repeated for three days. On the sixth day the milk was normal.

CASE IV. About one year ago cow had shown a small swelling at base of teat. Two weeks previous to our treatment the swelling had suddenly increased in size and at time of treatment was about three inches in diameter. The swelling was punctuated with a hypodermic needle and a thin straw-coloured fluid escaped. Cultures

from this revealed pure growth of streptococci. Cultures from the milk of that quarter showed no growth. The abscess was opened and packed with iodoform gauze; the wound covered with sterile gauze held in place by adhesive tape. The second day after the abscess was opened the milk from that quarter became thick. Cultures from that quarter showed streptococci, which had undoubtedly passed up the milk canal. Gave twenty-five c.c. of formalin and on the third day the milk was normal to all appearances but no cultures were made. Ten days later the milk became thick and cultures showed a growth of streptococci. This time twenty-five c.c. was continued daily for three days and on the fifth day the milk appeared normal and cultures were sterile.

CASE V. Cow had been milking hard for a few days and the trouble was gradually increasing. A small amount of exudate was found on end of teat, forming a scab. After removing the exudate the external orifice was found to be normal. Further examination showed a small swelling in the teat canal, at the upper end, which was producing stenosis of the teat and causing hard milking. Cultures from the milk of this quarter showed micrococci and *B. coli*. Gave twenty-five c.c. of formalin and repeated in twenty-four hours. Also painted the base of the teat with tr. iodin and had the exudate on the end of the teat softened with warm antiseptic solution before each milking. Four days after the owner reported that the exudate had stopped forming and the milk was flowing more easily. Two weeks later he reported the cow milking very well.

Much credit is due to Dr. Pickens for making and examining the cultures and also to Dr. Hayden for testing the milk for formalin.

Summarising the above briefly:—

1. Give a good dose of salts to start things and in the saline solution let there be an ounce of formalin (40%).
2. Give 1 oz. of formalin in a quart of water as a drench B.I.D.
3. *Keep the quarters milked out all the time* and allow client to use all the liniment he wants.

(*Journal of the American Veterinary Medical Association.*)

Personal.

CONGRATULATIONS to Mr. Frederick Bullock, F.R.G.S., the indefatigable Secretary of the Council of the Royal College of Veterinary Surgeons, on the French decoration of "Officier" of the Order of Nichan-Iftikhar. This decoration, which has been conferred on the recommendation of the Bey of Tunis, is one bestowed by the French Government for distinguished work in connection with Tunisian affairs, and the grade of "Officier" is a high one. It may not be known to

the profession generally, but Mr. Bullock is a linguist of no mean order, and well known in certain literary circles. It is good to see that the French Government have singled him out for recognition in this way.

Our readers will congratulate Mr. Edward McSwiney, M.R.C.V.S., of Cork, on the brave defence he made when his house was attacked by Sinn Feiners. His cowardly assailants suffered severely for their temerity, as Mr. McSwiney used his revolver with some effect. Unfortunately he himself was badly shot in the right arm, and this has since had to be amputated below the elbow. The latest report from hospital is, however, that he is quite out of danger and making excellent progress.

At the last meeting (the first since the war) of the Société Centrale de Médécine Vétérinaire, held in Paris, Major-General Sir John Moore, C.B., K.C.M.G., F.R.C.V.S., and Major Frederick Hobday, C.M.G., F.R.C.V.S., F.R.S.E., were elected as Foreign Corresponding Members.

The Ministry of Agriculture has appointed the following eminent pathologists as a Scientific Committee to investigate Foot and Mouth Disease: Professor Robert Muir, Professor of Pathology, University of Glasgow (Chairman); Sir John McFadyean, Principal and Professor of Pathology, Royal Veterinary College, Camden Town; Lieutenant-Colonel C. J. Martin, Director of the Lister Institute of Preventative Medicine and Professor of Experimental Pathology, University of London; Mr. Clifford Dobell, Protistologist to the Medical Research Committee and Assistant Professor of Protistology and Cytology, Imperial College of Science; Professor J. M. Beattie, Professor of Bacteriology, University of Liverpool, and Dean of the Medical Faculty, University of Liverpool; and Sir Stewart Stockman, Chief Veterinary Officer of the Ministry of Agriculture. Between January 1st and February 23rd of this year, it was stated in Parliament by Lord Strachie, on the evening of March 4th, that there had been 33 outbreaks of Foot and Mouth Disease altogether, and 1,636 animals had been slaughtered; and the Earl of Crawford on the same occasion said that since January 9th, 1919, outbreaks had occurred in 24 counties, 115 separate premises being affected.

Review.

DEPARTMENT OF AGRICULTURE, CANADA: REPORT OF THE VETERINARY DIRECTOR GENERAL (F. TORRANCE, B.A., D.V.S.), FOR THE YEAR ENDING MARCH 31, 1918. Printed by J. de Labroquerie Taché, Ottawa, 1919.

This Report gives evidence of grand work done despite absence on military service of a number of veterinary inspectors. The meat

and canned food industry has extended and prospered, and oleomargarine manufacture has been commenced. Contagious pleuropneumonia, and foot and mouth disease are still unknown in Canada. Glanders, hog cholera, and dourine (thanks to the complementary fixative test) all showed a marked decline. Sheep scab is practically unknown, only five cases occurring in Manitoba. Cattle mange has caused some trouble in Saskatchewan and Southern Alberta.

There has been an extension in municipal testing for the control of tuberculosis, and the regulations now apply to any city or town applying for federal aid. Compensation has been raised to two-thirds the appraised value of the animal from one-third formerly.

Experiments have proved that young pigs fed on tuberculous milk become tuberculous to the extent of 80 per cent., and if fed thus continuously for a month 100 per cent. become infected. In some cases in Canada it was found that herds were supplying milk to be consumed in the raw unpasteurised state where almost every cow in the herd was diseased. The danger to the children of the country was very obvious, for there is no reason to believe that they are less susceptible to the effect of consuming tuberculous milk than in the case of the pig. The good done is evidenced by the fact that since measures against tuberculosis were instituted over 700 diseased cows have been removed from the dairies supplying the cities and towns. In Saskatoon, Regina, North Battleford, and Ottawa tuberculin testing has been largely carried out with very gratifying results. The Biological Laboratory at Ottawa has had a very busy year—50,000 doses of tuberculin and mallein have been manufactured at the Laboratory and given away. In addition to the investigation and diagnosis of animal diseases invaluable aid has been rendered to the Field Veterinary Division, the Meat and Canned Foods Division, and to the farmers of Canada at large through examination of specimens submitted for diagnosis.

Twenty-six candidates passed the meat inspection examination and fourteen took service in the Meat Inspection Division. The construction and equipment of the packing-houses have been greatly improved during the year; 90,226 more cattle were slaughtered than in the preceding year, and only 1.07 per cent. of these carcases was condemned.

G. M.

NOTICES.

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